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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/559,112 | 12/02/2005 | Mario Schoedner | GK-OEH-218 / 500814.20120 | 1276 |
| 26418 | 7590 | 04/24/2008 | EXAMINER | |
| REED SMITH, LLP ATTN: PATENT RECORDS DEPARTMENT 599 LEXINGTON AVENUE, 29TH FLOOR NEW YORK, NY 10022-7650 | | | CULBERT, ROBERTS P | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/559,112 | Applicant(s) SCHOEDNER ET AL. | |
| | Examiner ROBERTS CULBERT | Art Unit 1792 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 16-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/2/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "applying a surface activatable compound containing a... surface activating compound, a... cross-linking agent and a... complexing agent is applied to the substrate". The meaning is unclear since both "applying" and "is applied" are used in the same phrase.

Claim 28 recites "a surface activating compound comprising an activating compound, a cross-linking agent and a complexing agent." It is unclear if the complexing agent and cross-linking agent are part of the claimed "activating compound". Thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 16, 21, 22, 24, 25 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO/0035259 to Naundorf et al. in view of U.S. Patent 5,200,272 to Sirinyan et al.

Regarding Claims 16 and 28, WO/0035259 to Naundorf et al. teach a method for the structured metallization of polymer substrate materials (Page 11) and ceramic substrate materials (Page 14), comprising the steps of: applying a surface-activatable compound containing a nonconductive organic transition metal complex (pd-acetate) as surface-activating compound, a dicarboxylic acid (Pages 4-5) as cross-linking agent, or melamine derivative (Page 6) as complexing agent is applied to the substrate material by suitable coating; selectively irradiating the surface-active compound by light; and subsequently carrying out an electroless metallization of the irradiated areas to form metallic structures in a chemically reductive bath.

Naundorf et al. teach the "*complexing agents possess the advantageous property that they are sufficiently soluble or easily dispersible in polymer phases and are also highly compatible*" (Page 9) and further teach incorporation into a thermoplastic resin, (Page 14) but do not expressly teach the melamine resin is used with the dicarboxylic acid. However, Film formers including melamine resin are well known in the art and would have been obvious to select for one of ordinary skill in the art. Sirinyan et al. teach melamine resin is suitable for applying a palladium complex to a substrate in a metallization pre-treatment. (Col. 4, Lines 18-42). It would have been obvious to one of ordinary skill in the art at the time of invention to use the well known polymers and solvents to apply the metal complex to a substrate as a primer as such application is routine in the art and does not require creative or inventive effort.

Regarding Claim 21, Naundorf et al. teaches the transition metal complex contains palladium. (Page 12)

Regarding Claim 22, Naundorf et al. teaches the compound is dissolved in a solvent and applied in a liquid form. (Page 10-11)

Regarding Claim 24, Naundorf et al. teach the laser is at a wavelength of less than 600 nm.

Regarding Claim 25, Naundorf et al. teach the laser radiation is generated with a frequency doubling or tripling Nd:YAG laser ($\lambda = 532$ nm or 355 nm) (Page 12)

Regarding Claim 23, Naundorf et al. teaches solvent i.e. dimethylformamide, but does not expressly teach THF. However, THF is a well known alternative solvent. For example, Sirinyan et al. teach the solvent may be THF tetrahydrofuran. (Col. 2, Line 66 – Col. 3, Line 3) It would have been obvious to one of ordinary skill in the art at the time of invention to select a suitable such as THF as suggested by Sirinyan et al.

Regarding Claim 27, Naundorf et al. in view of Sirinyan et al. teach the method of the invention substantially as claimed, but do not expressly teach the removal of non-irradiated surface-activating compound after irradiation is also carried out in tetrahydrofuran. However, one of ordinary skill in the art would have found it obvious at the time of invention to use the same solvent for removal since same were known to be capable solvents for solvating the applied material, the step requiring no inventive or creative effort.

Regarding Claim 29, Naundorf et al teach the activating compound is a transition metal complex based on palladium and the dicarboxylic acid, and Sirinyan et al. teach carboxylic acid anhydride is preferred, (Col. 2, Lines 39-42) but the references do not expressly teach maleic anhydride is the dicarboxylic acid. However, it would have been obvious to one of ordinary skill in the art at the time of invention to select from the relatively short list of well known commercially available dicarboxylic acids and their derivatives such as maleic anhydride.

Regarding Claim 30 Naundorf in view of Sirinyan teach the method of the invention substantially as claimed, but do not teach the compound, in relation to a solvent proportion of 100 parts by weight, contains 0.8 to 2.0 parts by weight of palladium diacetate, 5 to 15 parts by weight of melamine resin, and 0.2 to 0.5 parts by weight of maleic anhydride.

However, the courts have held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation, unless the recited changes produce a new and unexpected result. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ

233, 235 (CCPA 1955). Generally, changes in temperature, concentrations or other process conditions of an old process do not impart patentability unless the recited changes are critical, i.e., they produce a new and unexpected result. See MPEP 2144.05.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO/0035259 to Naundorf et al. in view of U.S. Patent 5,200,272 to Sirinyan et al. and in further view of U.S. 6,210,537 to Murphy et al.

Regarding Claim 26, Naundorf et al. in view of Sirinyan et al. teach the method of the invention substantially as claimed, but does not expressly teach that the laser radiation is generated by an argon-ion laser ($\lambda = 488$ nm). However, Murphy et al. teaches argon ion laser for forming metal lines from a metal complex. (See Example 8 and Claim 50) It would have been obvious to one of ordinary skill in the art at the time of invention to use argon-ion laser as an equivalent means to apply a metal complex to the substrate at a particular linewidth 100 microns.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO/0035259 to Naundorf et al. in view of U.S. Patent 5,200,272 to Sirinyan et al. and in further view of JP 57100139 A to Terakubo.

Regarding Claim 17, Naundorf et al. in view of Sirinyan et al. teach the method of the invention substantially as claimed, but does not expressly teach that the surface of the substrate of a polyimide polymer material is pretreated chemically, physically or thermally in order to roughen it. However, Terakubo teach that the surface of the substrate of a polyimide polymer material is pretreated chemically in order to roughen it. (See Abstract) It would have been obvious to one of ordinary skill in the art at the time of invention to use pre-treatment, as the step is conventional for polyimide material prior to activation/catalyst to provide increased surface roughness for improved adhesion of a metal thereto by a plating process.

Regarding Claim 18, Terakubo teaches the substrate is pretreated by etching the substrate surface.

Regarding Claim 19, Terakubo teaches the etching solution is a hydrochloric acid solution diluted in water.

Regarding Claim 20, Terakubo teaches the etching process takes place by heating the etching solution (20-70 degrees).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571)272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roberts Culbert/
Primary Examiner, Art Unit 1792